AMENDMENT OF SOLICITATION/	MODIFICATION OF CO	NTRACT	1. CONTRACT ID CODE	PAGE OF PAGES
2. AMENDMENT/MODIFICATION NO. 90	3. EFFECTIVE DATE See Block 16C		TON/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
ISSUED BY CODE		7. ADMINISTERED BY (If other than Item 6) CODE		
John F. Kennedy Space Center, Procurement Office – ODIN – OF Kennedy Space Center, FL 3289	P-MS			
8. NAME AND ADDRESS OF CONTRACTOR (No.,	, street, county, State, and Zip Co	de) (x)	9A. AMENDMENT OF SOLIC	ITATION NO.
	VID: \$007221		9B. DATED (SEE ITEM 11)	
OAO Corporation	CAGE: 60317			
7500 Greenway Center Drive Greenbelt MD 20770			10A. MODIFICATION OF COM	ITRACT/ORDER NO.
Greenbert in 2 2017 o			NAS5-98144/C	C90303B
<u></u>			10B. DATED (SEE ITEM 13)	
CODE FACIL 11. THIS ITEM ONLY APPLIES TO AMENDMENTS	ITY CODE		December 1, 200	1
THIS ITEM APPLIES ONLY TO MODIFICATIONS A. THIS CHANGE ORDER IS ISSUED PUR NO. IN ITEM 10A.	SUANT TO: (Specify authority) 1	THE CHANGES S	ET FORTH IN ITEM 14 ARE MA	DE IN THE CONTRACT ORDER
B. THE ABOVE NUMBERED CONTRACT/O appropriation date, etc.) SET FORTH IN ITEM	I 14, PURSUANT TO THE AUTH	ORITY OF FAR 4	3.103(b).	nanges in paying office,
c. THIS SUPPLEMENTAL AGREEMENT IS NAS5-98144 Contract Claus Terms and Conditions-Com	se C.7 Technology Ref	reshment P		se 52.212-4 Contract
D. OTHER (Specify type of modification and a		9		
IMPORTANT: Contractor] is not, X	is required to sign this docu	ment and return	1 copies to the issu	uing office.
. DESCRIPTION OF AMENDMENT/MODIFICATION	(Organized by UCF section head	lings, including so	licitation/contract subject matter	vhere feasible.)
tennis Space Center	ODIN SERVIC	EES		
echnology Infrastructures: SWRs XK3	37 3491 00 Rev 2; NJ00	L3AK 00; I	3B51 3N25 00	- '
nange in Delivery Order Price: \$308,	141.02 (INCREASE)			
cept as provided herein, all terms and conditions of the A. NAME AND TITLE OF SIGNER (Type or print)	e document referenced in Item 9A	or 10A, as hereto	ofore changed, remains unchange	ed and in full force and effect.
Keith L. Spencer	10	Penelope		icit (1906 or print)
Sr. Contracts Manager		Contractin		
3. CONTRACTOR/OFFEROR	15C. DATE SIGNED 16	B. UNITED STA	TES OF AMERICA	16C. DATE SIGNED
(Signature of Person authorized to sign)	22 Jul 2003 BY		pl a Clirishit	7/29/03
0-01-152-8070	30-105	1 3 4	<u> </u>	FORM 30 (Rev. 10-83)

JUS EDITION UNUSABLE

Prescribed by GSA FAR (48 CFR) 53.243

1. In accordance with Master Contract NAS5-98144, C.7, Technology Refreshment Process, the technology refreshment services referenced below is hereby incorporated into this Delivery Order at a fixed price of \$308,141.02

SWR #	Subject	Amount
XK37 3491 00 Rev 2	Installation of Data-Net for EMCS throughout SSC for NASA	\$230,042.32
	Relocate existing classified Cat5 and fiber from hallway into classified rooms in B1002 to conform with Security	
NJ00 L3AK 00	Regulations	\$25,838.68
BB51 3N25 00	Install Cat3, Cat6 and fiber in room F6902 area of B1105 for NASA/CRSP	\$52,260.02
	TOTAL	\$308,141.02

2. SWR XK347 3491 00 Rev 3

The contractor shall provide the labor (including, but not limited to, engineering, configuration management, user coordination/scheduling, wiring/cabling and equipment installation) and materials necessary to upgrade the existing EMCS data-net system by installing new Adtran and UMC equipment to various buildings at SSC as identified in OAO proposal dated June 1, 2003. This will allow EMCS to monitor SSC buildings faster.

- a. The contractor shall perform the following tasks:
- (1) Install (2) 7' x 23" equipment cabinet e/w Plexiglas front door with lock and perforated rear door in room 129 in B2201.
- (2) Install (1) UMC chassis and associated T1AX circuit cards and RPSU power supplies in new 23" equipment cabinet installed in item (1) above.
- (3) Install (6) 25-FT 25-pair cables from the rear of UMC chassis mounted in 1st new equipment cabinet to 2nd new equipment cabinet in room 129 and terminate on new Visipatch panel.
- (4) Install (5) Adtran Smartshelf units in 23" equipment cabinet that was installed in item (1) above.
- (5) Install (60) Adtran ISU128 rack mount circuit cards in the Adtran SmartShelves installed in item (3) above.
- (6) Install (4) Adtran BR1/10 channel banks in equipment cabinet that was installed in item (1) above.
- (7) Install (2) 25-FT 25-pair cables from each of the (5) Adtran BR1/10 channel banks in room 129 between cabinets and terminate on Visipatch panels mounted in new equipment cabinet.
- (8) Install (1) Adtran TSU600 equipped with (1) Adtran Dual Ubrite and (1) TSU drop & insert module into existing equipment cabinet in B8100 to serve B8100 and B8110.
- (9) Install (1) UMC chassis and associated T1AX circuit cards and RPSU power supplies in existing equipment rack in B8100.
- (10) Install (7) 25-FT 25-pair cables within room 111A, (6) from UMC chassis and (1) from TSU600 to 110 wiring blocks on wall.
- (11) Install (1) Adtran BR1/10 L8 in B3203 to serve B3203, B3202, B3201 and South Lagoon.
- (12) Install (2) 50-FT 25-pair cables within room 123 in B3203 and terminate on 110 wiring block.

- (13) Install (1) Adtran BR1/10 L8 in B1103 in existing equipment rack to serve B1005, B1007, B1008, B1105, B1103, B1110 and B3312.
- (14) Install (2) 50-FT 25-pair cables within room 221 in B1103 and terminate on 110 wiring block.
- (15) Install (2) Adtran BR1/10 L2 in B2204 to server B2204, B2040, B2205, B2203, B2119, B2120, B2120, B2108, B2109, B2105, B2101, B2201, B2105, and B2210
- (16) Install (4) 50-FT 25-pair cables within room 213 in B2204 and terminate on 110 wiring block.
- (17) Install (1) Adtran BR1/10 L2 in B4995 to serve B4995, B4110, B4120, B4122, B4220, B4210, and B4400.
- (18) Install (2) 50-FT 25-pair cables in within room 151 in B4995 and terminate on 110 wiring block.
- (19) Install (1) Adtran BR1/10 L8 in B1009 to serve B1009.
- (20) Install (2) 50-FT 25-pair cables within room A158 in B1009 and terminate on 110 wiring block.
- (21) Install (1) Adtran BR1/10 L2 channel bank and (1) Adtran BR1/10 L8 in B1201 to serve B1210, B1100, B1020, B8102, B1200, B1201, B3101, B1000, B1002, B1003, B4010, B4011, and B7001.
- (22) Install (4) 50-FT 25-pair cables within room 116 of B1201 and terminate on 110 wiring block.
- (23) Install (1) Adtran TSU600 equipped with (1) Adtran Dual Ubrite and (1) TSU drop & insert module into existing equipment rack in B2436 to serve B2436 and B2435.
- (24) Install (1) 25-FT 25-pair cable from TSU600 to 110 wiring block in room 113 of B2436.
- (25) Install (1) Adtran BR1/10 L8 in B8301 to server B3305, B8306, B8301, B3305, and B4101.
- (26) Install (2) 50-FT 25-pair cables within room 115 in B8301 and terminate on 110 wiring block.
- (27) Remove cross connects from wiring blocks that presently feed the ADI's in room 129 in B2201 and place new cross connects to activate new ISU128 modems installed in the new equipment cabinets.
- (28) Remove cross connects from the wiring blocks in all the other buildings listed above and place new cross connects to activate the new ISU128 modems.
- (29) Test each circuit and make sure it meets specifications before turning it over to EMCS.
- (30) Remove all the ADI's from B2201 and various other buildings and store in B1201.
- (31) Work with EMCS to cutover existing system to new system.
- (32) Install (1) 6-strand fiber cable from room 136 to room 129C.
- (33) Install (2) LIU's in room 129C and terminate fiber into ST connectors and place in LIU's.
- (34) Install (1) LIU in room 136 next to existing LIU and terminate (2) strands of fiber from B1201 and terminate (4) strands of fiber that was installed in item (1) above.
- (35) Install (1) 300-pair wiring block in room 129C.
- (36) Install and terminate (1) 200-pair copper cable in room 129C to new equipment cabinet on computer floor in room 129 and terminate on a Visipatch panel mounted by OAO.
- (37) Install (1) duplex singlemode fiber jumper from room 129C to new equipment cabinet on computer floor in room 129.
- (38) Test and label fiber at both ends.
- (39) Test and label 200-pair copper cable at both ends.

- b. The contractor shall provide the following material:
- (1) 80 each Adtran ISU128 stand alone (120209L2)
- (2) 80 each Adtran ISU128 rack mount (1200087L1)
- (3) 10 each Adtran Dual UBRITE (1200108L1)
- (4) 8 each Adtran BR1/10 Channel Bank (4150BR2X10L20) 23" rack mount
- (5) 7 each Adtran TSU600 (1200076L2#DC)
- (6) 7 each Adtran DSI (1200065L1)
- (7) 5 each Adtran BR1/10 Channel Bank (4150BR2X10L8) 23" rack mount
- (8) 4 each Adtran Smartshelf (4202023L5)
- (9) 28 each Advance Fibre T1AX (0110-0193)
- (10) 6 each Advance Fibre FO-XCVR (0120-0040)
- (11) 3 each Advance Fibre UMC Chassis (0210-0033)
- (12) 3 each Advance Fibre R-PSU (0101-0006)
- (13) 3 each Advance Fibre CPU II e/w Ver 7.1 software (0101-0027)
- (14) 1 each Advance Fibre ELU (0101-0028)
- (15) 1 each Advance Fibre EBC (0101-0029)
- (16) 1 each Advance Fibre L-PSU (0101-0019)
- (17) 1 each Advance Fibre EBF 3M Expansion Bank Fiber (0410-0003)
- (18) 1 each Advance Fibre EBF 5M Expansion Bank Fiber (0410-0005)
- (19) 1 each Advance Fibre EBF 10M Expansion Bank Fiber (0410-0006)
- (20) 500 FT of Belden 8618 stranded 3-wire 16 AWG
- (21) 230 each 110C-3 (pk/10) (073040)
- (22) 100 each 110C-3 connectors (pk/10) (073040)
- (23) 36 each 25-pair cable e/w single-ended male connector 25FT (143744)
- (24) 30 each Avaya Visipatch distribution Rings (532421)
- (25) 30 each 3-feet 2-pair Visipatch cords Gray (221272)
- (26) 30 each 5-feet 2-pair Visipatch cords Gray (221274)
- (27) 30 each 7-feet 2-pair Visipatch cords Gray (221275)
- (28) 18 each 25-pair cable e/w single-ended male connector 50-FT (143745)
- (29) 18 packs 188UT1-50 transparent label holders (073093)
- (30) 18 each 110U19M rack mount bracket Visipatch (213601)
- (31) 18 each 2319F1.75 pair of flush reducer brackets for 23" to 19" (GL) 1.75"
- (32) 12 each 110AW2-100 wiring block (154069)
- (33) 12 each 2319 pair of recessed reducer brackets for 23" to 19" (GL) 8.625"
- (34) 8 each CME8424 vertical cable management (Great Lakes)
- (35) 8 each Avaya 336-pair Visipatch kits (532210)
- (36) 8 each 23" T-Bar for mounting Visipatch panels (30014-500) CPI
- (37) 8 each Avaya Visipatch horizontal duct (539650)
- (38) 4 each 10-meter singlemode FCPC/ST fiber jumper (FSMD-2266-10M)
- (39) 4 each 8411-32EL lift-off louvered sides (GL)
- (40) 2 each 7207 front & rear sliding shelf (7207_FRSL-AHD) (GL)
- (41) 2 each GL8401E-2932 Advantage Gray Equipment Cabinet 23" rails (GL)
- (42) 2 each fan assembly (3-fans) (TPE-24F) (GL)
- (43) 2 each 8402E-29 plexiglass door w/lock (GL)
- (44) 2 each 8402EM-29 mesh back door (GL)
- (45) 2 each 7207FRSL-AHD 23" sliding shelves (GL)
- (46) 2 each 7208 set of castors (2-locking, 2-unlocking (GL)
- (47) 1 each 7218 8-outlet vertical 6' power strip (GL)
- (48) 1 each 60 feet singlemode fiber jumper ST/FCPC (FCDSAFCST-060)

- (49) 340 feet of Corning 6-strand singlemode fiber cable (370-342-ASMODE-06)
- (50) 80 each 200-pair copper cable plenum (CMP-20024SAC-3)
- (51) 15 packs of 110C-5 connectors (061265)
- (52) 10 each P3020A-Z-125 singlemode ST connectors (157475)
- (53) 10 each cool cure consumables (142172)
- (54) 8 each C3000A-2 singlemode ST couplers (105263)
- (55) 2 each 10A panels (088980)
- (56) 2 each 100A LIU panels (146050)
- (57) 1 each 60 feet singlemode jumper ST/FCPC (FCDSAFCST)
- (58) 1 each Avaya 300-pair terminal block (154071)
- (59) 1 each Avaya 188B2 wire organizer (112052)
- b. Schedule: The completion of this effort shall be (16) sixteen weeks after the receipt of a signed Modification.

3. SWR NJ00 L3AK 00

The contractor shall provide the labor (including, but not limited to, engineering, configuration management, user coordination/scheduling, wiring/cabling and equipment installation) and materials necessary to install (2) new fiber cables and to relocate existing Cat5 and fiber from unclassified area into classified rooms in B1002 to conform to security regulations as identified in OAO proposal dated May 28, 2003.

- a. The contractor shall perform the following tasks:
 - (1) Relocate Cat5 and duplex fiber from unclassified area in the north hallway to classified office area.
 - (2) Install (2) 12mm/12sm fiber cables from room 178 addition up to room 200 area.
 - (3) Install cable tray in room 178 addition and in room 200 area.
 - (4) Install free standing aluminum equipment racks in room 178 addition and in room 200 area.
 - (5) Install fiber panels in room 178 addition and in room 200 area to place new fiber cables.
 - (6) Test and label new fiber cable at both ends.
- b. The contractor shall provide the following materials:
 - (1) 2,000 feet Corning plenum HYBRID MIC fiber cable (370-949-HYBRID-12/12)
 - (2) 104 each cool cure consumables (142172)
 - (3) 104 each P2020C-C-125 multimode ST connectors (118974)
 - (4) 96 each C2000A multimode ST coupler (088987)
 - (5) 12 each double sided vertical trough (166031)
 - (6) 8 each CPI 19" x 84" aluminum equipment rack (086047)
 - (7) 8 each Panduit LD10 raceway (13155)
 - (8) 6 each Panduit LD5 raceway (131156)
 - (9) 5 each Cooper B-line cable tray (26AST-12-144)
 - (10) 5 each Cooper B-line splice plates (9A-10106)
 - (11) 4 each LST1U-072/7 termination shelf (106722)
 - (12) 4 each 1000ST panels for LGX panel (106730)
 - (13) 4 each Cooper B-line cross connector brackets (9A-1240)
 - (14) 3 each Cooper B-line blind end plate (9A-1086-12)
 - (15) 2 each Cooper B-line frame box connector (9A-1076-12)
 - (16) 1 pack Panduit inside corners (131130)

- (17) 1 pack Panduit outside corners (131228)
- (18) 1 pack Panduit right angle (131126)
- (19) 1 pack Panduit Tees (142140)
- (20) 1 pack Panduit reducer fitting (142142)
- c. Schedule: The completion of this effort shall be (6) six weeks after the receipt of a signed Modification.

4. SWR BB51 3N25 00

The contractor shall provide the labor (including, but not limited to, engineering, configuration management, user coordination/scheduling, wiring/cabling and equipment installation) and materials necessary to install Cat3, Cat6 and fiber in room F602 area of B1105 for NASA/CRSP as identified in OAO proposal dated May 31, 2003.

- a. The contractor shall perform the following tasks:
 - Install (4) American Access Technologies Zone Cabling termination cabinet in computer floor in room F603.
 - (2) Install (1) 24-port Cat6 patch panel in each of the (4) termination cabinets in room F603.
 - (3) Install (1) 24-port fiber patch panel in each of the (4) termination cabinets in room F603.
 - (4) Install (2) LGX fiber panels in room F601 in new equipment rack.
 - (5) Install (4) 336-pair Visipatch panels on wall in room F601.
 - (6) Install flextray from room F601 in drop ceiling through out F602 area.
 - (7) Install flextray under computer floor in room F603.
 - (8) Install (1) TG70 Panduit raceway from computer floor up to drop ceiling in room F603 so that wiring can be placed back to room F601.
 - (9) Install (2) Cat6 wires from (28) locations back to room F601 and terminate on Visipatch panel that was installed in item (5) above.
 - (10) Install (1) duplex multimode fiber cable from (10) locations in F602 area back to room F601 and terminate into ST connectors and place in new LGX panels installed in item (4) above.
 - (11) Install (24) Cat6 wires from (4) zone termination cabinets in room F603 back to room F601and terminate on Visipatch panels that were installed in item (5) above.
 - (12) Install (24-strand multimode fiber cable from (4) zone termination cabinets in room F603 back to room F601 and terminate into ST connectors on both ends and place in LGX panel in room F601.
 - (13) Install (144) Cat6 solid copper cables from network hub and terminate on new Visipatch panels installed in item (5) above.
 - (14) Install (1) level-3 wire to (10) locations in the F602 area back to F603.
 - (15) Install (2) RJ11 jacks in existing faceplates where possible.
 - (16) Install (1) 100-pair 110 wiring block in room F603 and terminate level 3 wires.
 - (17) Test and label Cat6 wiring.
 - (18) Test and label multimode fiber cable.
 - (19) Test and label level-3 wire
 - (20) Provide red line drawing to OAO so that floor plans can be updated
- b. The contractor shall provide the following materials:
 - 18,000 feet of Avaya 2071 level 7 plenum wire (CMP-00424MAX-7U-06)
 - (2) 2,000 feet of Corning MIC 2-strand multimode fiber cable (370-949-FDDI-02)

- (3) 375 feet of Corning MIC 24-strand multimode fiber cable (370-949_FDDI-24)
- (4) 232 each P2020C-C-125 multimode ST connectors (118974)
- (5) 232 cool cure consumables (142172)
- (6) 144 each Avaya level 7 solid copper cords (108793-969-06-25)
- (7) 116 each C2000A multimode ST couplers (088987)
- (8) 116 each Avaya ST fiber inserts (190662)
- (9) 100 each 25 feet Cat6 station cords (MM25-AV7E-04) green
- (10) 60 each 14 feet Cat6 station cords (MM14-AV7E-04) green
- (11) 60 each 5-meter duplex multimode ST/SC fiber jumper (152014)
- (12) 60 each 2-meter duplex multimode ST/ST fiber jumper (139055)
- (13) 56 each T568A/B Cat6 jack (246746) green
- (14) 40 each Flextray center hanger supports (196501)
- (15) 35 each 8-inch L brackets (217074)
- (16) 35 each stanchion clamp (216883)
- (17) 33 each Avaya M14L-262 4-hole faceplate (197613) white
- (18) 33 each Flextray 2" x 8" x 10' (174337)
- (19) 30 each Caddy J-hooks (184873)
- (20) 20 each 3/8" threaded rod (FT1909)
- (21) 18 each Avaya Visipatch distribution rings (532421)
- (22) 15 each 2-meter duplex multimode ST/SC fiber jumper (152012)
- (23) 15 each Flextray Z bracket (174353)
- (24) 4 each American Access Raided Floor Box (200652)
- (25) 4 each Avaya 24-port PatchMax patch panel (246722)
- (26) 4 each Avaya 24-port MultiMax blank patch panel (176455)
- (27) 4 each Avaya fiber management kit (176801)
- (28) 4 each Avaya 336-pair Visipatch panel (532210)
- (29) 4 each Avaya Visipatch horizontal duct (539650)
- (30) 2 packs washer splice kit (214856)
- (31) 2 packs 3/8" steel anchors (FT38075STB)
- (32) 2 each LST1U-072/7 termination shelf (106722)
- (33) 2 packs 1000ST panels for LST1U-072/7 (106730)
- (34) 1 roll of Velcro ties
- (35) 1 pack 3/8" coupling nut (FT1860)
- (36) 1 pack 3/8" hex nuts (FT1844)
- (37) 1 pack 3/8" flat washer (FT1876)
- (38) 1 each Panduit TG70 base & cover raceway (230476) 8-feet
- (39) 2,000 feet Avaya Cat3 plenum wire (CMP-00424MAX-3U)
- (40) 22 each Avaya M1BH Cat3 RJ11 jack (240707) gray
- (41) 2 pack of 110C-4 connectors for 110 wiring block (073039)
- (42) 1 each Avaya 100-pair wiring block (154069)
- c. Schedule: The completion of this effort shall be (10) ten weeks after the receipt of a signed Modification.
- 5. Part II "Contract Administration Data", Item 4, is revised as indicated below to incorporate the increase of \$308,141.02 for these infrastructure upgrades:

ESTIMATED TOTAL (Contract Item 4)	(through Mod 90)		
Ordered Seats and Services		\$ 7,070,923.20	

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Catalog Actuals	\$ 413,263.93
Specialized Services Actuals	\$ 8,850.00
Infrastructure upgrades	\$ 2,213,273.75
Fast Track Mods Authorized	\$ -
Subtotal	\$ 9,706,310.88
Less credits	\$ (2,625.55)
Less retainage not earned	\$ (74,871.83)
Subtotal	\$ 9,628,813.50
Seats/service levels projected through 11/30/04	\$ 6,599,620.27
Total Estimated Delivery Order Value	\$ 16,228,433.77

6. Part V "Technology Infusion (Infrastructure Upgrades)", Item 2 is modified to include the subject infrastructure upgrades. The signed date and completion date will be completed in a future infrastructure upgrade modification.

Mod		Date		
No.	Description	Signed	Date Completed	Amount
90	XK37 3491 00 Rev 2 Installation of Data-Net for			
	EMCS throughout SSC for NASA			\$230,042.32
90	NJ00 L3AK 00 Relocate existing classified Cat5			
	and fiber from hallway into classified rooms in			
	B1002 to conform with Security Regulations			\$25,838.68
90	BB51 3N25 00 Install Cat3, Cat6 and fiber in room			
	F6902 area of B1105 for NASA/CRSP			\$52,260.02

- 7. Payment Schedule: Invoicing and Payment for this modification will be made in accordance with Master Contract NAS5-98144, FAR 52.212-4: Commercial Items (May 1997) (Modified).
 - a. The following payment schedule is applicable for SWR XK37 3491 00 only:

\$175,869.02	The contractor may invoice for the material upon acceptance by the
	Government (AltDOCOTR or his designee)
\$ 26,907.24	The contractor may invoice upon acceptance by the AltDOCOTR that
	the equipment has been installed and ready for cutover
\$ 27,265.86	The contractor may invoice upon completion of the effort and
	acceptance by the customer.

- b. SWRs NJ00 L3AK 00 and BB51 3N25 00 may be invoiced upon completion of the effort and acceptance by the customer.
- 8. Reporting requirements: The contractor shall provide monthly status reports to the SSC Alternate DOCOTR, with a copy to the DOCO. These reports shall include, as a minimum, installation progress, and potential problem areas.
- 9. In consideration of the modification agreed to herein as complete equitable adjustment for the changes set forth, the Contractor hereby releases the Government from any and all liability under this delivery order for further equitable adjustments attributable to such facts or circumstances giving rise to these changes.
- 10. All other terms and conditions of this Delivery Order remain unchanged and in full force and effect.